

10/05/1.711

Rec'd
12/4/2003 @005IN THE CLAIMS

Please cancel claims 4, 7, and 16-21.

1. (Currently Amended) A method for coupling a highly phosphorylated mannopyranosyl oligosaccharide compound to a glycoprotein having at least one glycan, or to ~~chemical compounds with a carbonyl group~~, said method comprising:

derivatizing the highly phosphorylated mannopyranosyl oligosaccharide compound with a chemical compound containing a at least one carbonyl-reactive group;

oxidizing the glycoprotein having at least one glycan to generate at least one carbonyl (aldehyde) group on the glycoprotein; and

reacting the oxidized glycoprotein ~~having at least one glycan, or a chemical compound with a carbonyl group~~, with the derivatized highly phosphorylated mannopyranosyl oligosaccharide compound, thereby coupling the highly phosphorylated mannopyranosyl oligosaccharide compound to the glycoprotein having at least one glycan to form a new compound having a hydrazone bond.
2. (Original) A method in accordance with Claim 1 wherein oxidizing the glycoprotein having at least one glycan comprises oxidizing the glycoprotein with one of periodate or galactose oxidase.
3. (Original) A method in accordance with Claim 1 wherein the glycoprotein having the at least one glycan comprises a lysosomal enzyme.
4. (Canceled)
5. (Original) A method in accordance with Claim 1 wherein the highly phosphorylated mannopyranosyl oligosaccharide compound contains at least one mannose 6-phosphate group.

6. (Original) A method in accordance with Claim 5 wherein the highly phosphorylated manopyrosanyl oligosaccharide compound comprises a compound having the formula $6\text{-P-M}_n\text{-R}$ wherein:

M is a mannose or mannopyranosyl group;

P is a phosphate group linked to the C-6 position of M;

R comprises a chemical group containing a carbonyl-reactive group, and

n is an integer from 1-15, wherein if $n > 1$, M_n are linked to one another by alpha (1,2), alpha (1,3), alpha (1,4), or alpha (1,6).

7. (Canceled)

8. (Currently Amended) A method in accordance with Claim 5 wherein the highly phosphorylated mannopyranosyl oligosaccharide compound comprises a compound having the formula $(6\text{-P-M}_x)_m\text{L}_n\text{-R}$ wherein:

M is a mannose or mannopyranosyl group;

L is a mannose or other hexose or other chemical groups;

P is a phosphate group linked to the C-6 position of M;

R comprises a chemical group containing a carbonyl-reactive group;

m is an integer from 2-3;

n is an integer from 1-15, wherein if $n > 1$, M_n $n > 1$, L_n are linked to one another by alpha (1,2), alpha (1,3), alpha (1,4), or alpha (1,6); and

x is an integer from 1-15.

9. (Currently Amended) A method in accordance with Claim 8 wherein the highly phosphorylated mannopyranosyl oligosaccharide compound comprises a biantennary

mannopyranosyl oligosaccharide compound containing bis-M6P or a triantennary mannopyranosyl oligosaccharide compound containing bis-M6P or tri-M6P.

10. (Currently Amended) A method in accordance with Claim 1 wherein the highly phosphorylated mannopyranosyl oligosaccharide compound ~~can be~~ is substituted with oligosaccharides containing other terminal hexoses.

11. (Original) A method in accordance with Claim 10 wherein the terminal hexose is a galactose, a mannose, N-acetylglucosamine, and a fucose.

12. (Original) A method in accordance with Claim 1 wherein the chemical compound containing the carbonyl-reactive groups is a chemical compound that react with carbonyl groups to form a hydrazone bond.

13. (Original) A method in accordance with Claim 12 wherein the chemical compound containing carbonyl-reactive groups comprises a hydrazine, a hydrazide, an aminooxyl, or a semicarbozide compound or others.

14. (Original) A method in accordance with Claim 1 further comprising reducing the compound having a hydrazone bond with a reducing agent to form a compound having an imine bond.

15. (Original) A method in accordance with Claim 14 wherein the reducing agent comprises a cyanoborohydride compound.

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (New) A method for coupling highly phosphorylated mannopyranosyl oligosaccharide compounds to a glycoprotein having at least one glycan, said method comprising:

derivatizing the highly phosphorylated mannopyranosyl oligosaccharide compounds with at least one chemical compound containing at least one carbonyl-reactive group;

oxidizing the glycoprotein having at least one glycan to generate at least one carbonyl group on the glycoprotein; and

reacting the oxidized glycoprotein, with the derivatized highly phosphorylated mannopyranosyl oligosaccharide compounds, thereby coupling the highly phosphorylated mannopyranosyl oligosaccharide compounds to the glycoprotein having at least one glycan to form a new compound having at least one hydrazone bond,

wherein the highly phosphorylated mannopyranosyl oligosaccharide compounds comprise compounds having at least one mannose 6-phosphate group.

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Re: Non-Fec Amendment

Comments: Kindly acknowledge receipt hereon of an Amendment for Zhu Yunziang, Serial No. 10/051,771 filed January 17, 2003 entitled METHODS FOR INTRODUCING MANNOSE, 6-PHOSPHATE AND OTHER OLIGOSACCHARIDES ONTO GLYCOPROTEINS in response to the Office Action received on September 30, 2003

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